Nathanael GANDHI

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EDUCATION

MAR 17 - *Current*	B.Eng. (Hons), Diploma in Professional Engineering Practice **University of Technology Sydney** (UTS) Major: Mechatronic Engineering
MAR 16 - JAN 17	Diploma of Engineering UTS: Insearch

TECHNICAL SKILLS

Computer-aided design (CAD):	KiCad, Altium Designer, Solidworks
Software development:	Arduino, C++, Git, ROS, Matlab, Bash
Manufacturing:	Prototyping, Soldering, 3D printing, Laser Cutting
Circuit design:	Power Distribution, Signal Conditioning, Control
Electronics:	ADCs, 4-20mA, Load Cells, Motors/controllers, Encoders
Software:	Office Suites, Cloud Storage, Slack, Trello, Linux

CAREER PROFILE

JUL 21 - *Current*	Engineering Assistant at SPACE MACHINES COMPANY *Botany NSW 2019*
JUL 18 - JUL 21	Research Assistant at ROBOTICS INSTITUTE UTS (F.K.A. CENTRE FOR AUTONOMOUS SYSTEMS) *University of Technology Sydney*
DEC 18 - DEC 21	Executive at UTS ROBOTICS SOCIETY *University of Technology Sydney*
JAN 20 - FEB 20	Facilitator at SUMMER STUDIO 2020: DROID RACING CHALLENGE *University of Technology Sydney*
NOV 16 - JUL 18	Acting Team Leader at Kmart *Warriewood NSW 2102*
JUN 10 - JUN 17	Manager at Café Frendz *Lindfield NSW 2070*

CERTIFICATES

MARCH 20	HLTAID001 Provide cardiopulmonary resuscitation HLTAID002 Provide basic emergency life support HLTAID003 Provide first aid
MAY 19	White Card
JUN 17	Solidworks 2016 Essential Training - Linkedin Learning
OCT 16	CCNA Routing and Switching: Introduction to Networks - Cisco

Interests

Electronics and Automation
Microcontroller & Linux based projects using sensors, automation & cloud data logging

FOSS
Daily driving linux, self hosted NAS, DNS, Docker, k3s, system administration

3D Printing
Design for FDM 3D printing, optimisation, remote monitoring & control options

Computer Vision
Object recognition, self driving technology, SLAM

Experience

Jul 21 - *Current*

Engineering Assistant at Space Machines Company
Botany NSW 2019

Context: Transportation and logistics infrastructure and services tailored to space bound customers.

My contributions:

- Designing and building a MCU based, multi-node modular and scaleable data acquisition and control system.
- Designing analog to digital conversion, 4-20mA, load cell, thermocouple and accelerometer signal conditioning circuits.
- Drafted test plans, scope of work and supporting documentation.
- Mechanical: Implementing designed PCB onto test rig and performed test plans.
- Electrical: Calculating power requirements and suitable components for sensing and control systems. Designed and implemented wiring layouts minimising EMI. PCB design using Altium Designer and KiCAD.
- Software development: C++, Arduino/Teensy using SPI and building custom classes for components.
- Research and procurement of connectors, fuses, power management systems, batteries, signal conditioning ICs, PCB manufacturing, workshop tools.

Jul 18 - Jul 21

Research Assistant at Robotics Institute UTS
(f.k.a. Centre for Autonomous Systems)
University of Technology Sydney

Context: Robotics research group specialising in fundamental, applied and translational research for government, industry and the wider community. Real-world applications with industry partners in infrastructure robotics, assistive robotics and manufacturing.

My contributions:

- Designing, building and operating pipe inspection robots in partnership with Sydney Water.
- Mechanical lead for the self-driving mobility PhD project. The project received third in the academic category of the Dubai World Challenge for Self-Driving Transport 2019.
- Modeling and verification of sensing technology using Matlab and ROS.
- Interacting with suppliers for off-the-shelf and custom equipment.
- Mechanical: Modelling with Solidworks and AutoCAD. Designed and built acrylic housings, mounts and frames. 3D printed mounts and prototype parts. Modification, fabrication and service of new and existing parts.
- Electrical: Calculating power requirements and suitable components for robotic systems. Designing and implementing wiring layouts and harnesses. PCB design using Altium Designer.
- Software development: ROS, C++, Arduino/Teensy
- Research and procurement of Encoders, winches, connectors, fuses, fasteners, aluminium, acrylic, power management systems, batteries, computers, motors & custom specialty equipment.

Jan 20 - Feb 20

Facilitator at Summer Studio 2020: Droid Racing Challenge
University of Technology Sydney

Context: Summer studios are designed to be high energy, high collaboration, project-based subjects where students can engage in real-world design challenges.

My contributions:

- Students were equipped with agile and design thinking methodologies, acting as a framework for them to collaboratively design, build and present a robotic solution over the course of 6 weeks, addressing both the technical requirements of the Droid Racing Challenge and development of interpersonal skills required in today's modern workplace.
- The students had the freedom to follow a wide range of specialities in robotics such as computer vision, control systems, additive manufacturing, software, mechanical and electrical design.

Apr 18

Code2Learn Hackathon 2018
WiseTech Global, UTS

Context: 29-hour hackathon to use technology to improve the UTS experience. Our team used a mySQL, python-flask, HTML technology stack to seize a business opportunity in the employment market with a primary focus on university students and partners.

Awarded 4th place of the 14 teams presenting.

My contributions:

- Business strategy and idea development
- Project managed a team of 4, with 1 member working remotely
- Front-end UI/UX design and implementation using html and css
- Presentation design
- Presented the pitch to judges

Mar - Jul 18

Droid Racing Challenge 2018
Queensland University of Technology, MathWorks, Boeing Australia

Context: Interuniversity competition to build an automated bot to traverse an obstacle course by computer vision. Our solution was built using OpenCV, Python, Intel NUC and oCam camera mounted on a RC car chassis.

Awarded 1st place of the 8 competing teams.

My contributions:

- Mechanical development of a modular camera mounting system
- SolidWorks modelling of mounts and shell
- Laser cut acrylic shell
- 3D printed & scanned components

Mar 18

Design Corner 2018
Engineers Without Borders

Context: 4-day interuniversity competition utilising humanitarian engineering and appropriate technology. Our team combined multiple water filtration techniques in a creative way, while consuming less materials than any competing group.

Awarded 2nd place of the 8 teams presenting.

My contributions:

- Project managed a team of 3
- Presentation design
- Presented the pitch to judges with functional prototype

Feb 18

Technology Academy Bootcamp 2018
Accenture Sydney

Context: 4-day hackathon to experience how technology is used in tackling real world scenario problems with the Accenture Team and Technology Mentors. Our team utilised blockchain technology to seize a business opportunity in the renewable energy sector.

Awarded 1st place of the 7 teams presenting.

My contributions:

- Front-end UX design and implementation using react.js
- Built teamwork, management, communication, critical thinking, innovation, use case and technical skills
- Presented the pitch to judges

Nov 16 - Jul 18

Kmart

12 Jacksons Rd, Warriewood NSW 2102

My contributions:

- Customer service and query resolution skills
- Stock management and replenishment
- Warehousing and presentation experience
- Walkie stacker and electric pallet jack operation

Jun 10 - Jun 17

Café Frendz

20 Moore Avenue, Lindfield NSW 2070

My contributions:

- Kitchen hand
- 2012 promoted to full-time barista
- 2014 promoted to manager

Activities

Jun 16 - Dec 21

UTS Robotics Society (RoboSoc)

Competitions:

- Robowars 2019 UTS Internal Design Challenge - UTS Organiser
- Droid Racing Challenge 2019 (DRC 2019) - UTS Organiser
- Droid Racing Challenge 2018 (DRC 2018) - UTS Mechanical Lead

Workshops:

- Arduino Workshop 2020 - Technical Advisor
- Circuits Workshop 2019 - Organiser
- Introduction to Arduino Workshop 2019 - Organiser
- Matlab Workshop 2019 - Organiser
- Design thinking for high school students 2019 - Organiser
- Design thinking for educators 2018 - Organiser
- Intermediate Arduino 2018
- Beginner Arduino 2016

My contributions:

- 2021 Events Coordinator of UTS Robotics Society
- 2020 Treasurer of UTS Robotics Society
- 2019 President of UTS Robotics Society
  - Interacting with executives, members, UTS staff and the wider community to facilitate robotics learning at a personal level within the university.
  - 24 events involving technical, industry and social elements.
  - One interstate and one local competition with 4 teams overall.
  - Collaboration with over 8 other UTS societies.
- Hosting information and UTS experience tours Dec 18 - Apr 20
  - Groups ranging from primary school to educators to business figures.
  - Ranging from 6 - 30 people per event.
  - Designed and ran technical/design thinking workshops.
- Robotics Workshops
  - Introduction to Arduino Workshop: Sep 18
  - Hungry Robot: Sep 18: Hands on intro to Arduino Control
  - Weekly walk-in: Aug 18 - May 19: Soft structured workshops to provide guidance and enable collaboration between members on robotics projects

Jul 18 - *Jan 19*

UTS FEIT Student Advisory Board

The Faculty of Engineering and IT Student Advisory Board facilitates students and academics to tackle common problems together and holistically

My contributions:

- Brainstorming ideas and issues to create innovative positive change
- Engaging with students to identify and explore issues and challenges
- Relaying information and acting as a voice for fellow students at meetings
- Working with academics, staff and students to collectively transform problems

Mar 18 - *Mar 19*

Engineers Without Borders (EWB UTS)

- Design Corner 2018 - Competition
- Challenges to Rural Electrification 2018 - Workshop

Referees

Available on request